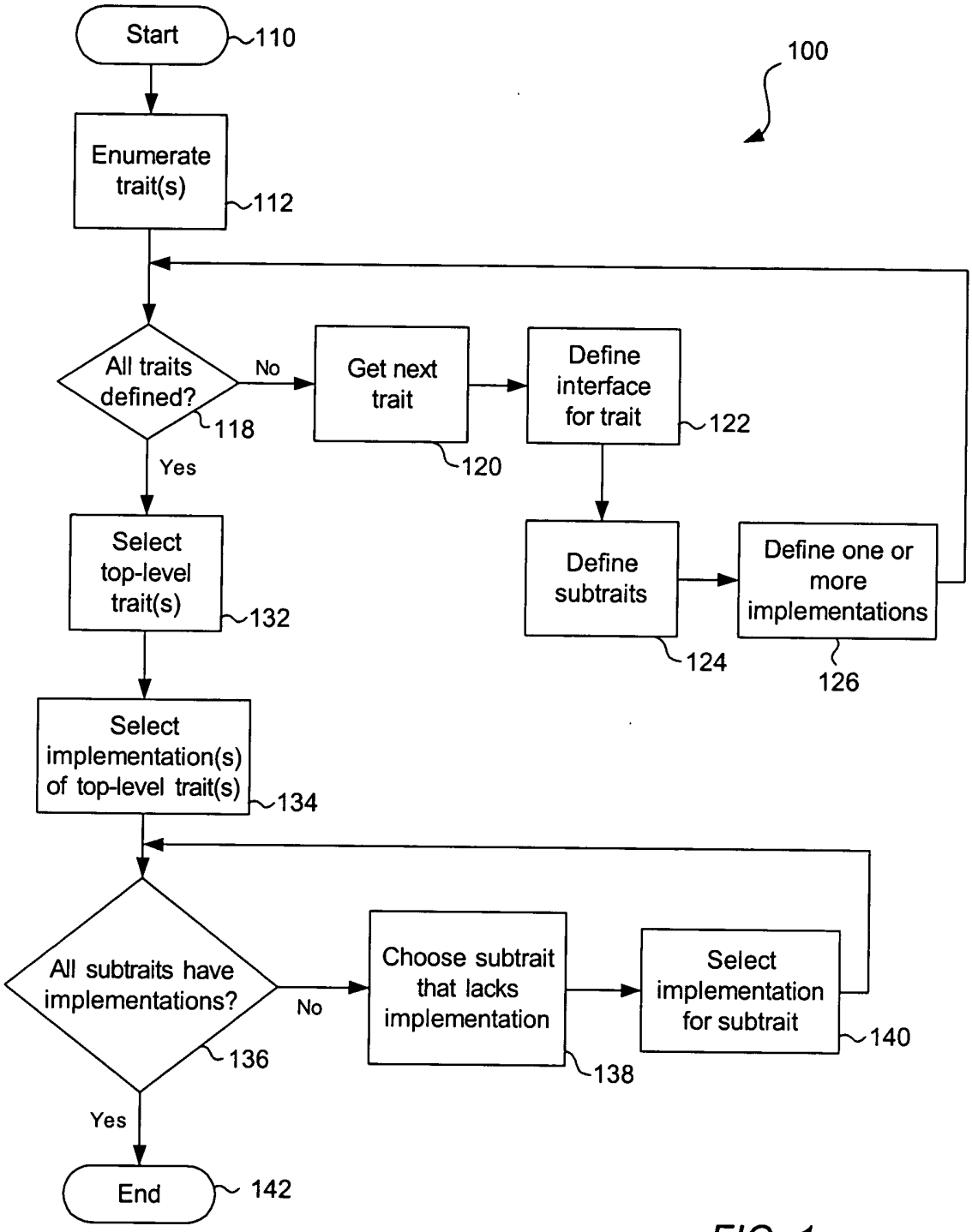
Start
110
100
Enumerate trait(s)
112
All traits defined?
118
No
Get next trait
120
Define interface for trait
122
Yes
Select top-level trait(s)
132
Define subtraits
124
Define one or more implementations
126
Select implementation(s) of top-level trait(s)
134
All subtraits have implementations?
136
No
Choose subtrait that lacks implementation
138
Select implementation for subtrait
140
Yes
End
142

FIG. 1

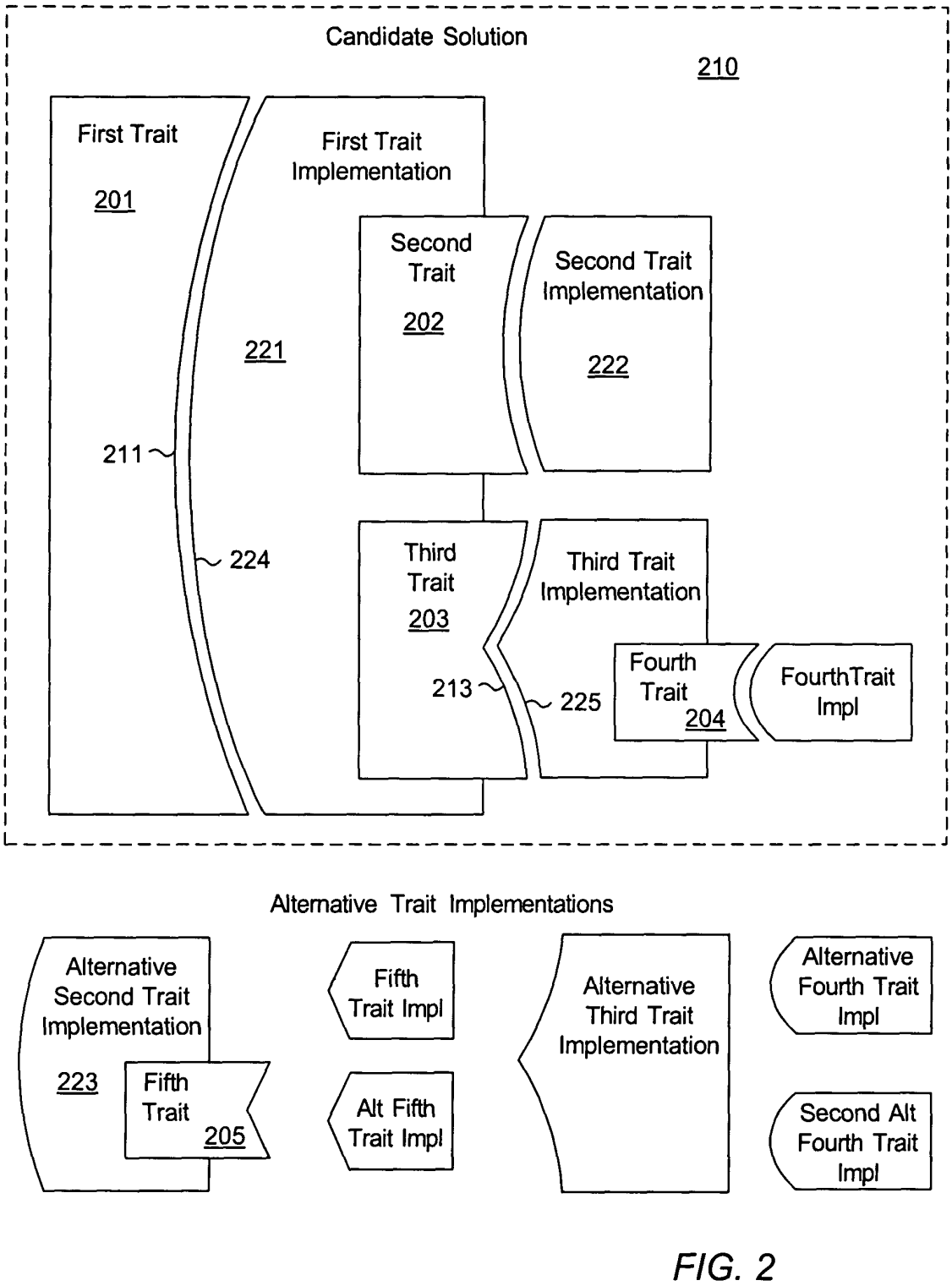
Candidate Solution
210
First Trait
201
First Trait Implementation
Second Trait
202
Second Trait Implementation
222
221
211
224
Third Trait
203
Third Trait Implementation
213
225
Fourth Trait
204
FourthTrait Impl
Alternative Trait Implementations
Alternative Second Trait Implementation
223
Fifth Trait
205
Fifth Trait Impl
Alt Fifth Trait Impl
Alternative Third Trait Implementation
Alternative Fourth Trait Impl
Second Alt Fourth Trait Impl

FIG. 2

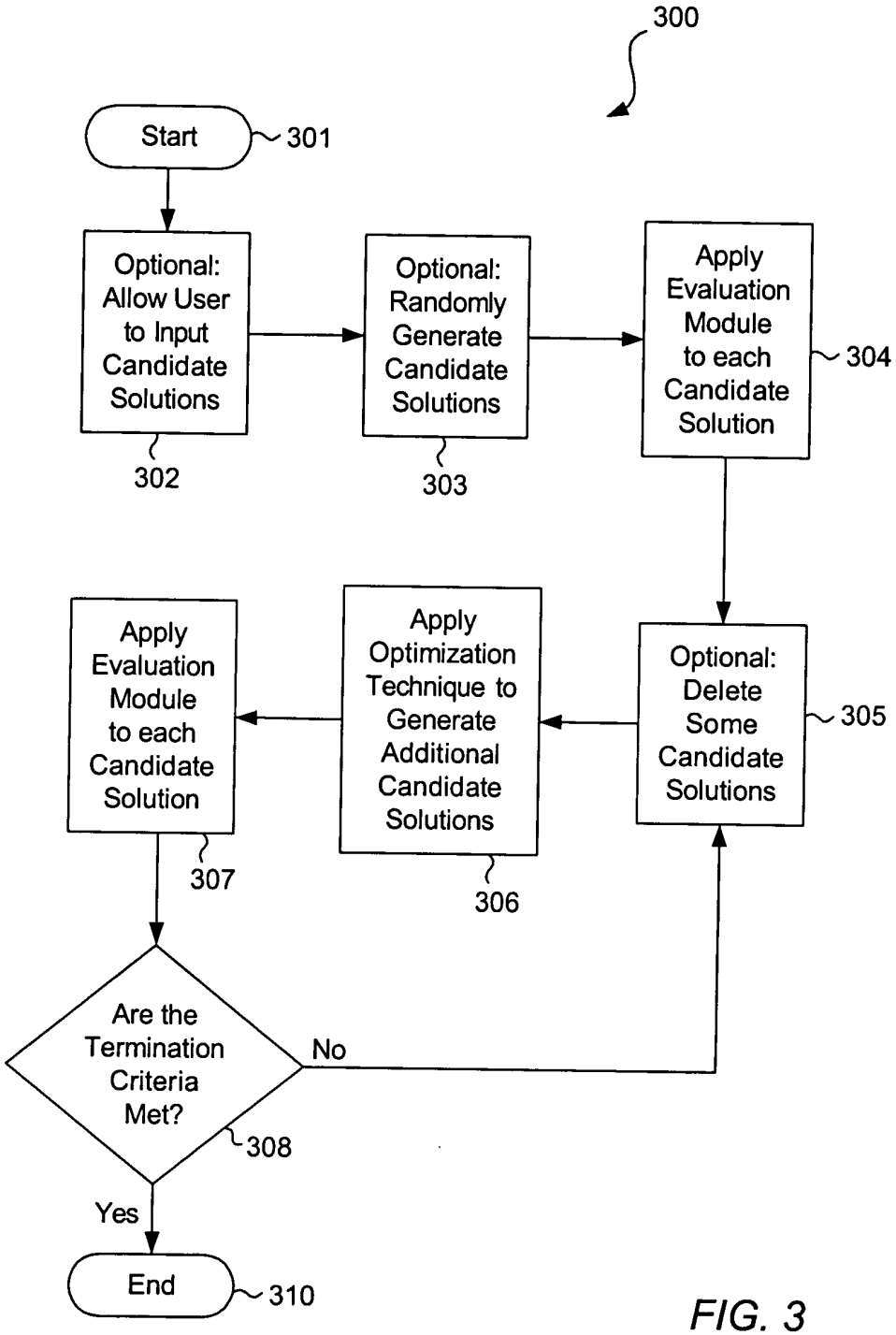
300
Start
301
Optional: Allow User to Input Candidate Solutions
302
Optional: Randomly Generate Candidate Solutions
303
Apply Evaluation Module to each Candidate Solution
304
Optional: Delete Some Candidate Solutions
305
Apply Optimization Technique to Generate Additional Candidate Solutions
306
Apply Evaluation Module to each Candidate Solution
307
Are the Termination Criteria Met?
308
No
Yes
End
310

FIG. 3

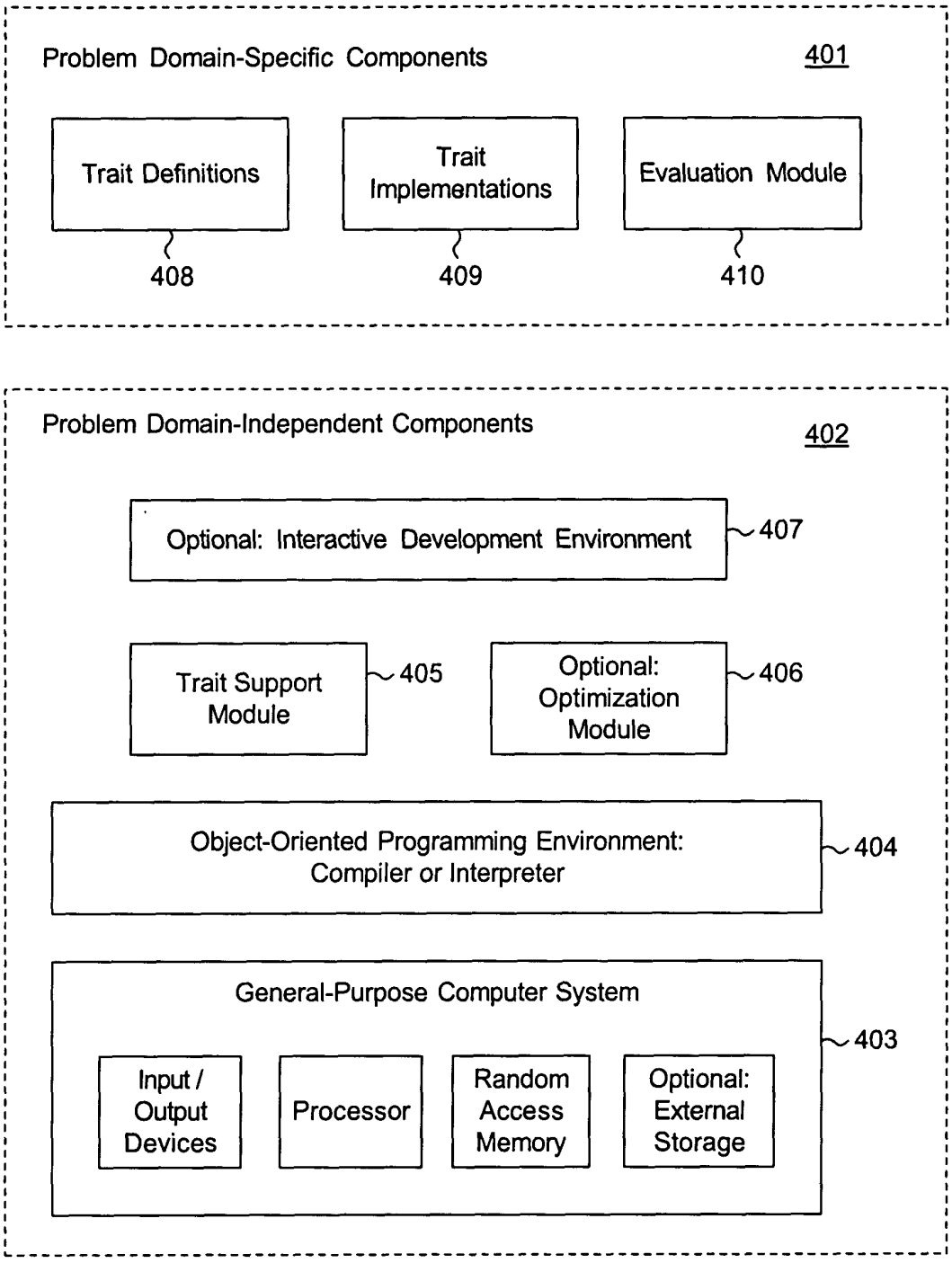
Problem Domain-Specific Components
401
Trait Definitions
Trait Implementations
Evaluation Module
408
409
410
Problem Domain-Independent Components
402
Optional: Interactive Development Environment
407
Trait Support Module
405
Optional: Optimization Module
406
Object-Oriented Programming Environment: Compiler or Interpreter
404
General-Purpose Computer System
403
Input / Output Devices
Processor
Random Access Memory
Optional: External Storage

FIG. 4

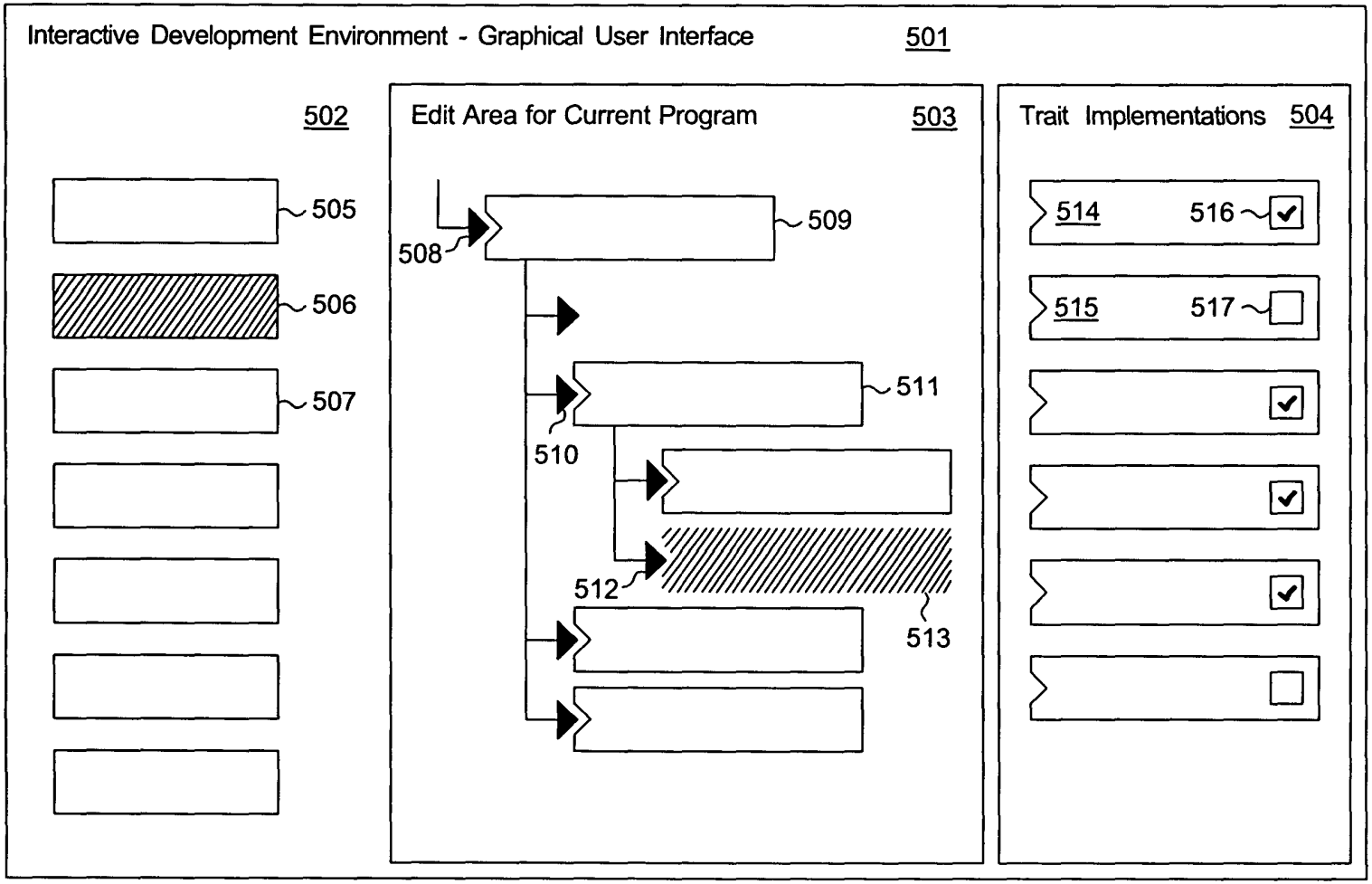
Interactive Development Environment - Graphical User Interface
501
502
Edit Area for Current Program
503
Trait Implementations
504
505
506
507
508
509
510
511
512
513
514
516
515
517

FIG. 5

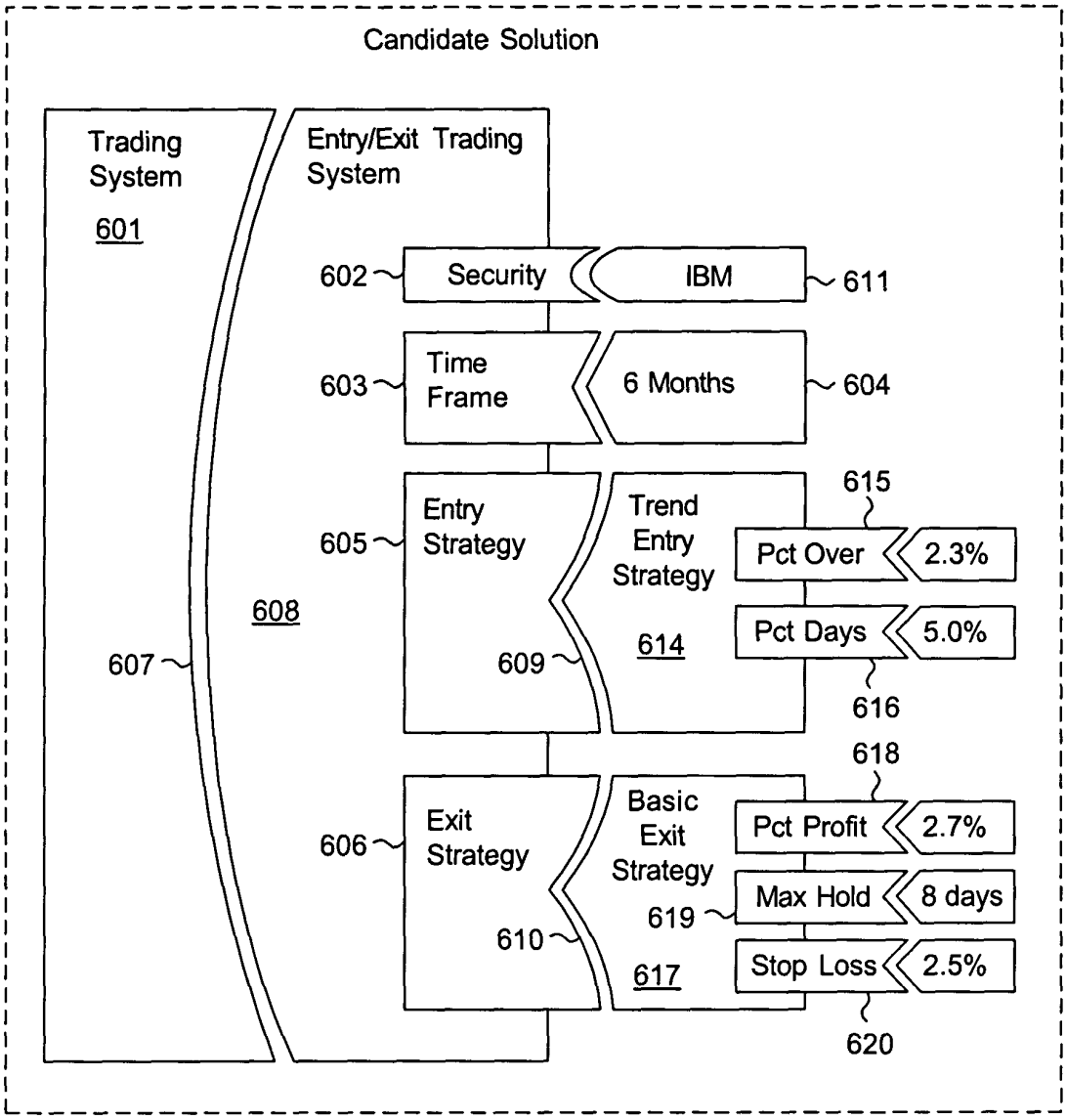
Candidate Solution
Trading System
601
Entry/Exit Trading System
602
Security
IBM
611
603
Time Frame
6 Months
604
605
Entry Strategy
Trend Entry Strategy
614
609
615
Pct Over
2.3%
Pct Days
5.0%
616
608
607
606
Exit Strategy
Basic Exit Strategy
617
610
618
Pct Profit
2.7%
Max Hold
8 days
619
Stop Loss
2.5%
620
Alternative Trait Implementations
SUNW
612
MSFT
613
2 Years
20 Years
621

FIG. 6

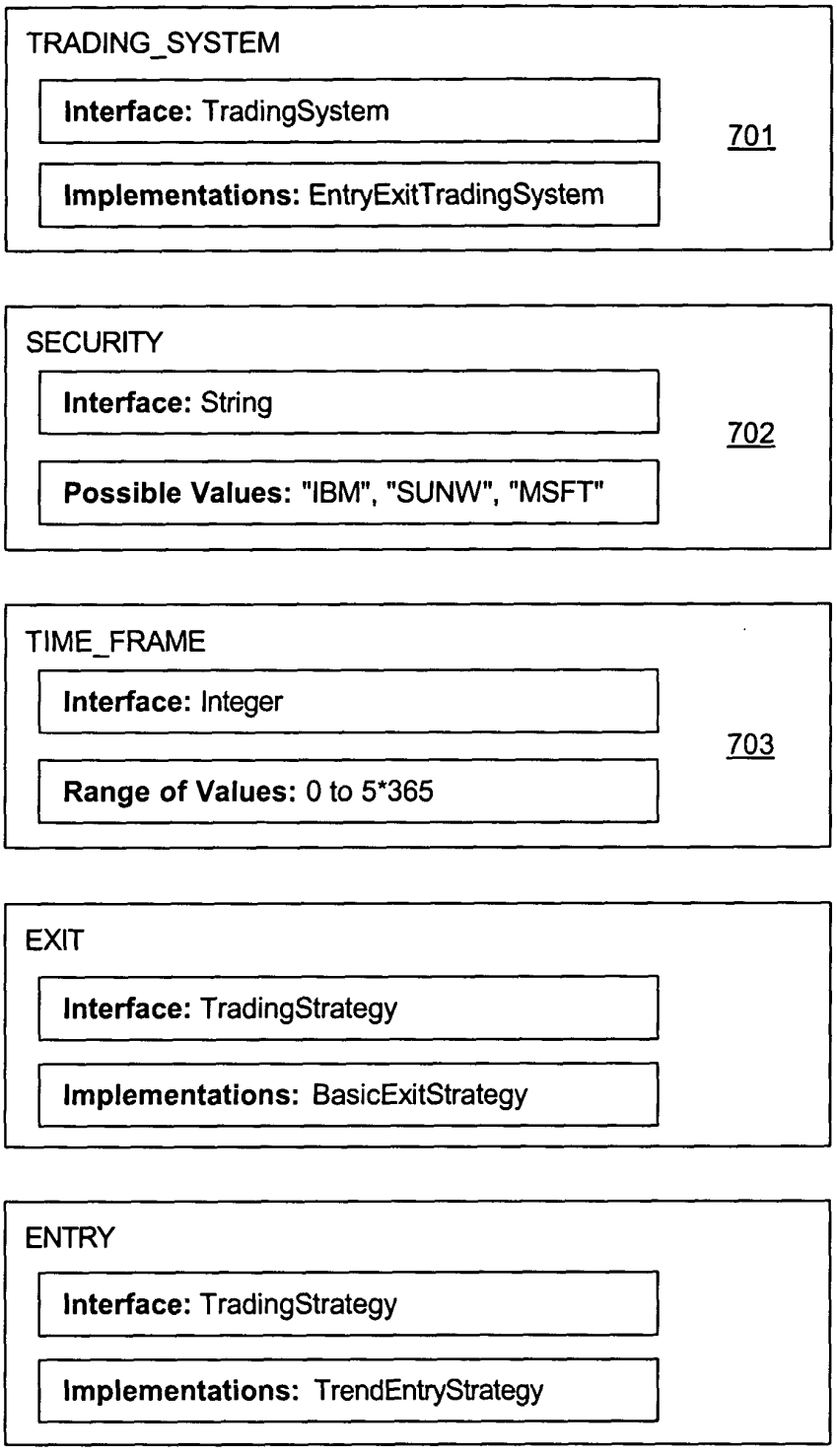
TRADING_SYSTEM
Interface: TradingSystem
Implementations: EntryExitTradingSystem
701
SECURITY
Interface: String
Possible Values: "IBM", "SUNW", "MSFT"
702
TIME_FRAME
Interface: Integer
Range of Values: 0 to 5*365
703
EXIT
Interface: TradingStrategy
Implementations: BasicExitStrategy
ENTRY
Interface: TradingStrategy
Implementations: TrendEntryStrategy

FIG. 7

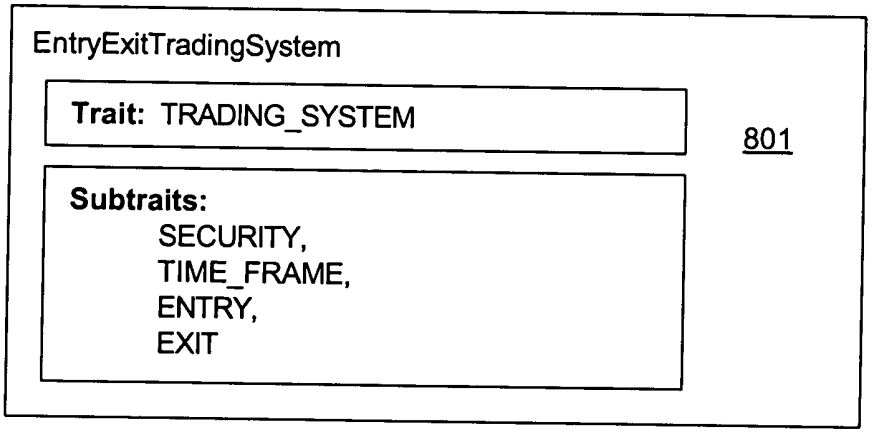
EntryExitTradingSystem
Trait: TRADING_SYSTEM
801
Subtraits:
SECURITY,
TIME_FRAME,
ENTRY,
EXIT

FIG. 8

EntryExitTradingSystem 901

Trait: TRADING_SYSTEM

Subtraits:
SECURITY,
TIME_FRAME,
ENTRY,
EXIT

Name: "Entry Exit Trading System"

Brief Description: "a system for buying and selling securities using an entry strategy and exit strategy"

Description: "This trading system buys and sells a single security within a specified timeframe. It uses an entry strategy to determine when to buy the security. It uses an exit strategy to decide when to liquidate the position."

ENTRY 902

Interface: TradingStrategy

Implementations: TrendEntryStrategy

Name: "Trading Strategy"

Brief Description: "a strategy for buying a financial securities"

Description: "The entry strategy determines when the security will be purchased, based on changes in the security's price."

FIG. 9